

PATTERNS OF THE DISPERSE-PHASE DISTRIBUTION OF ORGANIC ECOTOXICANTS IN THE WATER OF THE WORLD RIVER SYSTEMS

M.V. MILYUKIN, M.V. GORBAN

References:

1. Milyukin M.V., Goncharuk V.V. Chemical monitoring of organic ecotoxics in water systems. Kyiv: Naukova Dumka, 2016, 312 p., ISBN 978-966-00-1488-6.
2. Eqani S.A., Malik R.N., Cincinelli A., Zhang G. et al. Uptake of organochlorine pesticides (OCPs) and polychlorinated biphenyls (PCBs) by river water fish: The case of River Chenab. *Sci. Tot. Environ.* 2013, 450–451, P. 83–91.
3. Bandowe B.A.M., Bigalke M., Boamah L., Nyarko E. et al. Polycyclic aromatic compounds (PAHs and oxygenated PAHs) and trace metals in fish species from Ghana (West Africa): Bioaccumulation and health risk assessment. *Environ. Intern.* 2014, 65, P. 135–146.
4. Porta M., Zumeta E. Implementing the Stockholm Treaty on Persistent Organic Pollutants. *Occup. Environ. Med.* 2002, 59 (10), P. 651–652.
5. Xu W., Wang X., Cai Z. Analytical chemistry of the persistent organic pollutants identified in the Stockholm Convention: A review. *Analytica Chimica Acta.* 2013, 790, P. 1–13.
6. Suntio L.R., Shiu W.Y., Mackay D., Seiber J.N., Glotfelty D. Critical review of Henry's law constants for pesticides. *Rev. Environ. Contam. Toxicol.* 1988, 103, P. 1–59.
7. Delle Site A. The vapor pressure of environmentally significant organic chemicals: a review of methods and data at ambient temperature. *J. Phys. Chem. Ref. Data.* 1997, 26(1), P. 157–193.
8. Shiu W.Y., Mackay D. A critical review of aqueous solubilities, vapor pressures, Henry's law constants, and octanol-water partition coefficients of the polychlorinated biphenyls. *J. Phys. Chem. Ref. Data.* 1986, 15(2), P. 911–929.
9. Gdaniec-Pietryka M., Wolska L., Namiesnik J. Physical speciation of polychlorinated biphenyls in the aquatic environment. *Trends in Anal. Chem.* 2007, 26(10), P. 1005–1012.
10. Lei Y.D., Chankalal R., Chan A., Wania F. Supercooled liquid vapor pressures of the polycyclic aromatic hydrocarbons. *J. Chem. Eng. Data.* 2002, 47, P. 801–806.
11. Eastcott L., Shiu W.Y., Mackay D. Environmentally relevant physical-chemical properties of hydrocarbons: a review of data and development of simple correlations. *Oil Chem. Pollut.* 1988, 4, P. 191–216.
12. De Maagd P.G.J., ten Hulscher D.T.E.M., van den Heuvel H., Opperhuizen A. et al. Physicochemical properties of polycyclic aromatic hydrocarbons: aqueous solubilities, n-octanol/water partition coefficients, and Henry's law constants. *Environ. Toxicol. Chem.* 1998, 17(2), P. 251–257.
13. Sangster J. Octanol-water partition coefficients of simple organic compounds. *J. Phys. Chem. Ref. Data.* 1989, 18(3), P. 1111–1229.
14. Milyukin M.V., Gorbani M.V., Skrynnyk M.M. Monitoring and distribution of organochlorine pesticides, polychlorinated biphenyls and polycyclic aromatic hydrocarbons in surface river water and suspended particulate matter. *Methods and Objects of Chemical Analysis.* 2019, 14(3), P. 117–129.
15. Milyukin M.V., Gorbani M.V. Concentrations and regularities of disperse-phase distribution of organochlorine pesticides, polychlorinated biphenyls and polycyclic aromatic hydrocarbons in natural water. *Mediterranean Journal of Chemistry.* 2021, 11 (1), P. 32–42.
16. Yang D., Qi S., Zhang J., Wu C. et al. Organochlorine pesticides in soil, water and sediment along the Jinjiang River mainstream to Quanzhou Bay, southeast China. *Ecotoxicology and Environmental Safety.* 2013, 89, P. 59–65.
17. Tan L., He M., Men B., Lin C. Distribution and sources of organochlorine pesticides in water and sediments from Daliao River Estuary of Liaodong Bay, Bohai Sea (China). *Estuarine, Coastal and Shelf Science.* 2009, 84, P. 119–127.
18. Wurl O., Obbard J.P., Lam P.K.S. Distribution of organochlorines in the dissolved and suspended phase of the sea-surface microlayer and seawater in Hong Kong, China. *Marine Pollution Bulletin.* 2006, 52, P. 768–777.
19. Luo X., Mai B., Yang Q., Fu J. et al. Polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides in water columns from the Pearl River and the Macao harbor in the Pearl River Delta in South China. *Marine Pollution Bulletin.* 2004, 48, P. 1102–1115.
20. Patrolocco L., Ademollo N., Capri S., Pagnotta R. et al. Occurrence of priority hazardous PAHs in water, suspended particulate matter, sediment and common eels (*Anguilla anguilla*) in the urban stretch of the River Tiber (Italy). *Chemosphere.* 2010, 81, P. 1386–1392.
21. Bi C., Wang X., Jia J., Chen Z. Spatial variation and sources of polycyclic aromatic hydrocarbons influenced by intensive land use in an urbanized river network of East China. *Sci. Total Environment.* 2018, 627, P. 671–680.

22. Heemken O.P., Stachel B., Theobald N., Wencławiak B.W. Temporal variability of organic micropollutants in suspended particulate matter of the River Elbe at Hamburg and the River Mulde at Dessau, Germany. *Arch. Environ. Contam. Toxicol.* 2000, 38, P. 11–31.
23. SJeV. Unificirovannye metody issledovanija kachestva vod, ch. 1, t. 1. M.: Iz-dvo SJeV, 1987.
24. Guhr H., Karrasch B., Spott D. Shifts in the processes of oxygen and nutrient balances in the River Elbe since the transformation of the economic structure. *Acta hydrochim. hydrobiol.* 2000, 28 (3), P. 155–161.
25. Di Lascio A., Rossi L., Carlino P., Calizza E. et al. Stable isotope variation in macroinvertebrates indicates anthropogenic disturbance along an urban stretch of the river Tiber (Rome, Italy). *Ecological Indicators.* 2013, 28, P. 107–114.
26. Chen H., Teng Y., Yue W., Song L. Characterization and source apportionment of water pollution in Jinjiang River, China. *Environ. Monit. Assess.* 2013, 185, P. 9639–9650.
27. Chen H., Teng Y., Wang J. A framework of characteristics identification and source apportionment of water pollution in a river: a case study in the Jinjiang River, China. *Water Sci. Technol.* 2012, 65 (11), P. 2071–2078.
28. Zhu Z., Deng Q., Zhou H., Ouyang T. et al. Water pollution and degradation in Pearl River Delta, South China. *Ambio: A Journal of the human environment.* 2002, 31 (3), P. 226–230.
29. Yang X., Chen F., Meng F., Xie Y. et al. Occurrence and fate of PPCPs and correlations with water quality parameters in urban riverine waters of the Pearl River Delta, South China. *Environ. Sci. Pollut. Res.* 2013, 20 (8), P. 5864–5875.
30. Cheung K.C., Poon B.H.T., Lan C.Y., Wong M.H. Assessment of metal and nutrient concentrations in river water and sediment collected from the cities in the Pearl River Delta, South China. *Chemosphere.* 2003, 52, P. 1431–1440.
31. Zhang Y., Guo F., Meng W., Wang X.-Q. Water quality assessment and source identification of Daliao river basin using multivariate statistical methods. *Environ. Monit. Assess.* 2009, 152, P. 105–121.
32. Guo W., He M., Yang Z., Lin C. et al. Distribution of polycyclic aromatic hydrocarbons in water, suspended particulate matter and sediment from Daliao River watershed, China. *Chemosphere.* 2007, 68, P. 93–104.
33. Li H., Hopke P.K., Liu X., Du X. et al. Application of positive matrix factorization to source apportionment of surface water quality of the Daliao River basin, northeast China. *Environ. Monit. Assess.* 2015, 187: 80, P. 1–12.